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TORREYA

Vol. 37 July–August, 1937 No. 4

# Botanizing in the Shickshock Mountains of Gaspé, Quebec

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Those who know of the studies of the flora of the Gaspé Peninsula of eastern Quebec by Professor M. L. Fernald, Curator of the Gray Herbarium at Harvard University, during the past thirty years, do not need to be told of its remarkable and significant character. Its species have been listed and their significance as survivals of a pre-glacial flora noted in Professor Fernald's memoir, "Persistence of Plants in Unglaciated Areas, of Boreal America," published by the Gray Herbarium, in 1925, an essential guide to botanists in the region. Inspired by Professor Fernald's work, many professional and amateur botanists have visited Gaspé, and found it extremely interesting. Some of them go in every summer to Mount Albert and Table Top, higher summits of the Shickshock Mountains, in the interior of the peninsula. It is a rugged region, rising to 4,450 feet, with much of it above 2,500 feet, bare of timber, and with scores of snow and ice fields, persisting through the summer, which are survivals of local glaciers which were active not many thousands of years ago.

Three members of the Torrey Botanical Club, Mr. James Murphy, Mr. Louis W. Anderson, and the writer, entered the higher eastern Shickschocks region, in July, 1936, and found the flora novel and interesting and the scenery impressive. There are two ways to enter the region of Mount Albert and Table Top. One is to motor to St. Anne des Monts, on the south shore of the St. Lawrence estuary, about 800 miles from New York City, and hire boats to make the trip up the Riviere de St. Anne, 33 miles, to the Forks, a base camp site for climbs of Albert, to the west and Table Top to the east. The other way is to drive through Maine and New Brunswick to the head of the Bay of

Chaleur, and along its north shore to New Richmond, then up the Grand Cascapedia River. There is a good dirt road for about 30 miles, to the salmon fishing camps along this beautiful stream; then the road grows narrower and rougher and toward its end calls for careful driving. One branch goes to the main workings of the Federal Zinc and Lead Mine, on a summit 2,000 feet above sea, where the caretaker, James McWhirter, is hospitable and often allows small parties to use the cabins as the mine is not now in operation. Another branch, turning left about two miles before reaching the main mines, crosses a ridge and follows up Brandy Brook, to a branch mine working, a total distance of about 50 miles from New Richmond. A third branch turns right, about a mile before reaching the main mine and runs about five miles to Lake St. Anne, head of the St. Anne River.

From the Forks of the St. Anne, trails ascend Mount Albert and Table Top. Prof. Fernald's parties made their working base at a little lake, on the west side of Table Top. since called "Lac aux Americains," after the Harvard botanical party. The highest summit of the Table Top plateau, 4,450 feet, is called, on some maps, "Botanist's Dome," although, on the Quebec Forest Service maps, it is called "Mount Jacques Cartier," after the French discoverer of Gaspé.

The quickest way to get to Mount Albert is to follow the gravel and dirt road, from New Richmond, up the Cascapedia, taking the left turn, to the mine in Brandy Brook. Thence a wagon road may be followed on foot about five miles to the head of the brook, and over a pass, where it ends. From that point a narrow trail which seems, from the tracks, to be kept open largely by moose and bear, follows down a brook which enters the Isabelle River along the south side of Mount Albert. Good tent camp sites are found along the Isabelle.

Another way in to the mountains would be to follow the road from New Richmond, turning right, before reaching the main mine, to Lake St. Anne, where cars could be parked. From the outlet of the lake a trail runs along the stream to the Forks, where the trails to Albert and Table Top turn west and east.

On our drive in from New Richmond, we began to find interesting plants along the banks of the road, and after we left the car, on the wagon road up Brandy Brook. The banks were covered with dense colonies of lichens, especially of the genus Cladonia, of which the following have been determined, with the aid of Dr. A. W. Evans, of Yale University.

*Cladonia cenotea*, f. *crossota; C. cornuta*, ff. *scyphora* and *cylindrida*, with tall slender podetia; *C. cornutoradiata*, resembling *cornuta*, but branching; *C. deformis*, mostly f. *crenulata*, very robust and handsome; *C. gracilis*, var. *dilatata*, uncommonly robust; *C. major*, with large cups; *C. cristatella*, f. *Beauvoisii*, our familiar red-crested Cladonia, but much taller and larger-fruited than in the club range; *C. digitata*, f. *monstrosa*, a form with large, irregularly-branched cups and large, flat, scarlet apothecia. Other Cladoniae whiich occur in the club range, but are usually more robust in Gaspe, were: *C. chlorophaea*, *coniocraea*, ff. *ceratodes*, *truncata* and *pycnotheliza; squamosa*, f. *levicoticata*, mm. *pseudocrispata* and *rigida; rangiferina*, *alpestris*, *mitis*, *ochlochlora*, *nemoxyna*, and *multiformis*, f. *Finkii*. A little *C. botrytis*, a rare species, was found, but closer search should yield more of this, now recorded from Gaspé, Mount Marcy and British Columbia, and a very few other places in North America.

Growing over banks of *Hylocomnium proliferum*, which is the common moss of the forest at 2,000–2,500 feet, were large colonies of a beautiful grayish-green foliose lichen, somewhat resembling *Peltigera*, but which Mrs. Gladys P. Anderson named for us as *Nephroma arcticum*, a northern species.

After passing over the height of land and descending toward the Isabelle, we began to get views of the upper levels of Mount Albert, steep and imposing, and, to our surprise, with frequent snowfields at the heads of brook gullies. The black humus of the trail was trodden with moose hoofprints, and in places not cut up by the moose, we saw the footprints of bear in the mud. These large animals, together with caribou, must be common, from their tracks, but we saw none of them on our three days in the woods, nor did we hear any sound of them during the night, in our tent along the brook.

Next morning, a fine sunny day, (the temperature fell to 50° during the night but rose to above 70° in the afternoon) we started for the table land of Mount Albert. We had been crossing the limy shales and sandstones which prevail in the region, and which sometimes display plant fossils, casts of a Lepidodendron. Then we passed a belt of granite, and after crossing the Isabelle and starting to climb up a brook whose branches came from four snowfields, just below the rim of the summit, we entered a zone of reddish, greasy looking amphibolite, which encircles Albert, as may be noted on the Mount Albert map of the Canadian Geological Survey, the best large scale map for the mountain and its immediate surroundings. Soon we began to see new plants. First was the brilliant purple *Lychnis alpina* (*Viscaria alpina*, Britton & Brown), occurring in Newfoundland and Labrador, with its southernmost station on Mount Albert. A little farther up the brook we came upon beds of the alpine form of the Maidenhair Fern, *Adiantum pedatum*, var. *aleuticum*, obviously a Maidenhair, but differing distinctly from the common form of our club range in its stiffer, more upright, less crescentic fronds. This is one of the plants which Prof. Fernald cites as evidence that much of the flora of eastern Gaspé is made up of survivals from pre-glacial times, which persisted here, because, as Prof. A. P. Coleman,* demonstrates, the Labrador ice sheets did not cover this region, nor, as Prof. Fernald says, destroy pre-glacial flora, as they did to the westward and southwestward, in their advance south to the latitude of New York. I had read of this plant and its significance in its isolated stands in eastern North America, in Gaspé, in the Megantic Mountains of southern Quebec, and in Bruce Peninsula in Ontario; separated by almost 2,000 miles from stations in western unglaciated regions in the Sierras of northern California, Oregon, Washington, British Columbia and Alaska, including the Aleutian Islands, from which it was first noted by Rupprecht, and for which its varietal name is given. But it was delightful to find it, first at about 2,300 feet, then everywhere higher up to the topmost parts of the open slopes and table land, to 3,560 feet.

Farther up the brook, we came on another of the boreal flowering plants, which find their southernmost stations on Mount Albert. This was a strange looking thing, with linear, grass-like leaves, and hemispherical heads of lilac-tinted flowers, with scarious calyx tips. It suggested some form of *Allium*, but was obviously not liliaceous. We could not find it in our pocket

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* Bulletin No. 34, of the Canadian Department of Mines, "Physiography and Glacial Geology of Gaspé Peninsula, Quebec."

Gray, nor, when we got back home, in Britton & Brown. So we sent a photograph by Louis Anderson, to Prof. Fernald, who kindly named it as *Statice labradorica*, var. *submutica*, a member of the *Plumbaginaceae*. Prof Fernald referred me to the description of the species of this genus in America by S. F. Blake in Rhodora for January, 1917, years after the publication of our standard manuals on eastern flora, in which he names this form on Mount Albert as a new variety, *submutica*.

Near the contact of the red amphibolite and the greenish serpentized peridotite, which makes up the central bulk of Mount Albert, along the first two branches of the brook, we found another rarity, a stiff little fern, whose affinity with *Pellaea* or *Cryptogramma* was evident. It proved to be what Gray called *Cryptogramma densa*, although Fernald lists it in his memoir as *Pellaea densa*. Again, it occurs only in Gaspé and the Bruce Peninsula in the east, though found in many stations in the mountains of the northwestern United States and western Canada. It is another of the key plants, according to Dr. Fernald, indicating persistence of pre-glacial flora in spots that escaped the great glaciations.

Getting above the spruce and fir, and out upon the open slopes of thin sod and open gravel, we came on some plants known to us from alpine summits such as Mount Washington and Mount Katahdin; heaths such as *Ledum groenlandicum*, *Phyllodoce caerulea*, *Empetrum nigrum*, *Loiseleuria procumbens*, and *Cassiope hypnoides*. A mountain sandwort, something like *Arenaria groenlandica* of farther south, proved, from Dr. Fernald's determination, to be *A. marcescens*. The beautiful low Moss Campion, *Silene acaulis*, is common above 2,500 feet on Albert, but we were late for its best blooming, finding flowers only on plants near the summit. On the table land, slanting from the highest point at the south end, toward the abrupt walls of the valley of the Riviere du Diable ("Devil's Gulch"), we found larger ice fields than those on the southern slopes. One was several acres in extent, melting around its edges, with icy rills entering a tiny lake bordered by a meadow. Around the edge of the ice, little willows, probably *Salix brachycarpa*, from Prof. Fernald's lists, were just coming into bloom, with the pollen bright yellow on the tiny, silvery haired catkins. Summer comes late and last but a few weeks about these ice fields; the conditions, as Prof. Fernald points out, are quite like those of northern Labrador and south Greenland.

Lichens were not as numerous and robust on this exposed table land as I expected. *Cladonia alpestris* occurred but in small, narrow heads, much smaller than at lower altitudes along the mine road. *Cetraria islandica*, though common, was shorter, more stunted looking, than on high summits in the White Mountains, Green Mountains or Adirondacks, or even in the Palisades Interstate Park. We considered two theories to account for this: one, that the lichens are uncovered so short a time that they do not reach the more robust sizes of less bleak locations; another, that the caribou browse on them, for in winter, when the forest below 2,500 feet is covered five feet deep in snow, the summit of Albert is relatively bare, owing to the high winds which blow much of the snow off the table land, into great banks below. The caribou then betake themselves to the summit where they can plough through the snow with their frontal horns to find sufficient forage.

We did find one uncommon Cladonia, just a small colony, near the biggest of the ice fields, at about 3,300 feet. Dr. Evans identified it as *C. lepidota* (Sandst.) or *C. lepidota*, var. *gracilescens*, (Du Rietz). It seems to have affinities, in the form of its podetia and cups, with *C. degenerans*, of rather more southern latitudes, and somewhat more remotely, with *C. verticillata*, common in our club range. Sandstede records it from such northern latitudes as Nova Zembla, and Mrs. Joyce Hedrick Jones found it on Unalaska Island, Alaska, last summer. (Mich. Acad. 1936, p. 77.)

Much of the sod on the top of the mountain and fillings of crevices in the raggedly eroded peridotite, worn into strange shapes by millions of years or pre-glacial erosion, without the smoothing by ice sheets which we are accustomed to see in the northern parts of our club range, is made up of a moss new to us, with whitish leaf tips, which Dr. A. J. Grout named as *Rhacomitrium lanuginosum*.

Another odd looking flowering plant, found all the way up the mountain, was a pale, greenish-yellow form of the Painted Cup, *Castilleja pallida*, var. *septentrionalis*, ranging from Labrador and Newfoundland, to the high mountains of New England, and to Minnesota and the Black Hills of South Dakota. Its generic likeness to our scarlet-flowered *C. coccinea* was evident.

A pink-disked crustose lichen, growing on sod, was named for us by Mrs. Anderson as *Biatorella fossarum.* Dark forms of *Rhizocarpon* were the prevailing crustose lichens on the rocks; strangely, we did not see the lemon yellow *R. geographicum*, common on summit ledges on Katahdin, Washington, Mansfield, Marcy and MacIntyre. But the crustose lichens should have Mrs. Anderson's full attention for a couple of days.

On the trail, going back to our car, we were delighted with the beauty of the great Ostrich Ferns, not so common in our club range, but in these Gaspé forests, at 1,500 to 2,500 feet, as prevailing as the Cinnamon Fern is with us in New York.

We recommend one thing as essential to enjoyment of botanizing in comfort in this region,—an ample supply of "fly dope," to keep off black flies, "punkies" or "no see ums," and mosquitoes, in that order of virulence. We used a preparation called "Lollycapop," which was effective as long as it lasted, but for three men for three days, one box wasn't anything like enough. We recommend one box for two days for one person, also that one should not wash or shave, but plaster the grease on and let it make an impervious enamel.

The Shickshocks would make a richly rewarding objective for other members of the Torrey Botanical Club. Such a trip would take some grit and endurance, a lot of hiking and climbing, good nature over petty irritations, and plenty of "fly dope." We believe that early July, about a week earlier than our visit say July 4–20, would be best for prime flowering conditions.

Hollis, L.I., N.Y.